FACT SHEET FOR NPDES PERMIT WA0037273
FACILITY NAME SEASHORE VILLA MOBILE HOME PARK

SUMMARY

Seashore Villa is a small system serving a 117 connection mobile home park that discharges to Budd Inlet in Puget Sound. The sewage treatment system consists of an old steel package plant that uses the activated sludge process capable of extended aeration and includes a clarifier, and chlorine disinfection.

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INTRODUCTION

The Federal Clean Water Act (FCWA, 1972, and later modifications, 1977, 1981, and 1987) established water quality goals for the navigable (surface) waters of the United States. One of the mechanisms for achieving the goals of the Clean Water Act is the National Pollutant Discharge Elimination System (NPDES) permits, which is administered by the Environmental Protection Agency (EPA). The EPA has delegated responsibility to administer the NPDES permit program to the state of Washington on the basis of Chapter 90.48 Revised Code of Washington (RCW) which defines the Department of Ecology's (Department) authority and obligations in administering the wastewater discharge permit program.

The regulations adopted by the state include procedures for issuing permits [Chapter 173-220 Washington Administrative Code (WAC)], technical criteria for discharges from municipal wastewater treatment facilities (Chapter 173-221 WAC), water quality criteria for surface and ground waters (Chapters 173-201A and 200 WAC), and sediment management standards (Chapter 173-204 WAC). These regulations require that a permit be issued before discharge of wastewater to waters of the state is allowed. The regulations also establish the basis for effluent limitations and other requirements which are to be included in the permit. One of the requirements (WAC 173-220-060) for issuing a permit under the NPDES permit program is the preparation of a draft permit and an accompanying fact sheet. Public notice of the availability of the draft permit is required at least thirty days before the permit is issued (WAC 173-220-050). The fact sheet and draft permit are available for review (see Appendix A--Public Involvement of the fact sheet for more detail on the Public Notice procedures).

The fact sheet and draft permit have been reviewed by the Permittee. Errors and omissions identified in this review have been corrected before going to public notice. After the public comment period has closed, the Department will summarize the substantive comments and the response to each comment. The summary and response to comments will become part of the file on the permit and parties submitting comments will receive a copy of the Department's response. The fact sheet will not be revised. Comments and the resultant changes to the permit will be summarized in Appendix D--Response to Comments.

GENERAL INFORMATION	
Applicant	Fred Hines, Rachelle Woodcook PCF Mgmt. 8625 Evergreen Way, Suite 200 Everett, WA 98208
Facility Name and Address	Seashore Villa Mobile Home Park 4805 Cushman Road Northeast Olympia, WA 98506
Type of Treatment:	Extended aeration package plant
Discharge Location	Budd Inlet Latitude: 47° 05' 58" N Longitude: 122° 53' 52" W.
Water Body ID Number	47122A8J9

BACKGROUND INFORMATION

DESCRIPTION OF THE FACILITY

The Seashore Villa Mobile Home Park and its wastewater treatment facility are located on the eastern shore of Budd Inlet between Olympia and Boston Harbor. The system is small serving approximately 117 full time residential units, 112 of which are mobile homes, four are houses, and one is a duplex. The system at one time served a Department of Natural Resources (DNR) marine station which has been closed for several years but may return to service in the future. Because the Seashore Villa system was challenged of overloaded by the DNR wastewater, the DNR marine station would hold its waste water during the day and pump to the treatment system during the early a.m. hours.

The treatment facility consists of an old steel package plant that is mostly buried in the ground and covered with a wooden structure. The top of the steel aeration tank is covered with treated lumber planks so that most of the interior of the covered structure above the tanks serves as a workshop and partial laboratory. The integral clarifiers are not planked over. Copious amounts of rust appear visible on the tank, piping and most exposed metal. A corrosion and cathodic protection analysis was conducted in 1993 and cathodic protection was recommended to be installed shortly there after. Corrosion protection was a requirement in the previous permit that has not been fulfilled. A letter from the Department to the Permittee dated October 1993 states:

> "As indicated in the report, [by Norton Corrosion Engineers, 1993] the plant has exceeded its life expected lifespan and can be 'Assumed to be leaking or living on borrowed time.' Cathotic protection or other corrective action is necessary."

The cathodic protection was installed in August 2002 by Norton Corrosion.

HISTORY

The sewage treatment plant is a "package plant" steel tank that was installed in the 1960s after having been used in the 1950s. Continuous flow measurement was added in 1992. Alarm systems and computer pump controls were added during the last permit cycle. During the last permit, the plant capacity was increased to 15,000 gallons per day (gpd). The plant is now averaging 17,000 gpd.

COLLECTION SYSTEM STATUS

The nature of the mobile home park is that the housing units are close together with less collection pipe than a conventional residential neighborhood. An inflow and infiltration report dated February 2002 and conducted by Marig Engineering indicated that inflow and infiltration were not a problem. The system has reached its full build out and should not grow further due to the limitations of the treatment works. Past permits have limited the number of connections. The 1992 permit required a yearly infiltration and inflow report, however, a report was not filed from 1993-2001. Another infiltration and inflow report will be due near the end of the next five year permit cycle.

TREATMENT PROCESSES

The treatment works use an extended aeration and activated sludge process in the form of a package plant. Influent enters the steel aeration tank after passing through a bar screen made of rebar. Trash may be removed from the rack with a hand rake. An influent sample tube for a 24-hour sampler is installed at the bar screen. A blower supplies air to the aeration tank (12,500 gal tank capacity). The wastewater then enters the steel clarifier (2,500 gal capacity) followed by two chlorine contact chambers constructed of 36

inch diameter concrete conduit pipes (300 gal capacity each). Chlorination is completed using a liquid hypochlorite solution which is mixed in a plastic drum. Flow is measured by an ultrasonic flow meter installed in a tank with a V-notch weir for a visual back up.

The facility is classified as a level II plant, and therefore, the operator is required to be certified as a Group II operator or higher. The operator has a Group III certification and operates the plant for approximately one hour per day, five to six days per week. The operator works as a full time operator at the Fort Lewis Sewage Treatment Plant. Because of limited lab space and time, samples are analyzed at Water Management Laboratory Inc., a private commercial laboratory.

DISCHARGE OUTFALL

The discharge outfall is comprised of three-inch PVC pipe that terminates approximately 400 feet from the shore. The outfall is located on DNR aquatic lands and parallels a wood pier that is part of the DNR marine station. The marine station and pier have not been in use since the early 1990s. The outfall is located on DNR aquatic lands. A 1980 memoranda of understanding and agreement from DNR to the Seashore Villa property describes property disputes and agreements to solve the disputes (filed with the Department in 1991). The terminus of the outfall is located in 12 feet of water (MLLW). A video examination of the outfall was conducted in January 1993, and found the diffuser missing from the end of the outfall. A re-examination of the outfall will be recommended in the permit.

Secondary treated and disinfected effluent is discharged from the facility to Budd Inlet.

RESIDUAL SOLIDS

Sludge removed from the clarifier is stored in two cylindrical steel tanks with a combined total capacity of 1,500 gallons. Sludge is removed by a local septic hauler approximately four to six times per year and hauled to either the LOTT sewage treatment plant or to Biorecycling in Lewis County

Screenings which includes trash, rags, scum and grit are treated as solid waste and sent to the local transfer station.

PERMIT STATUS

The previous permit for this facility was issued on February 20, 1992. The previous permit placed effluent limitations on 5-day Biochemical Oxygen Demand (BOD_5), Total Suspended Solids (TSS), pH, and Fecal Coliform bacteria.

An application for permit renewal was received by the Department on March 22, 2002.

SUMMARY OF COMPLIANCE WITH THE PREVIOUS PERMIT

The facility received its last inspection on June 7, 2002.

During the history of the previous permit, the Permittee has not remained in compliance. This assessment is based on Discharge Monitoring Reports (DMRs) submitted to the Department over the last five years. Since 1997 there have been 41 permit violations. The following table shows where the Permittee has had difficulty.

Table 1: Seashore Villa Permit Compliance. (Based on the five year period from 1997—2002 DMRs)

Parameter	BOD lbs/day	BOD mg/L	BOD % removal	TSS mg/L	TSS % removal	Fecal coliform	Flow mgd	BOD loading lbs/day
Number of daily/monthly violations*	4 violations	7 violations	2 violations	8 violations	5 violations	3 violations	7 violations	5 violations

*Because BOD and TSS was sampled only once per month, the daily average and the monthly value are the same.

It should be noted that sampling frequency was less than the policy recommended frequency given by the Permit Writers Manual. As a result the BOD and TSS were sampled only once per month. The number of violations would likely be much higher if the frequency was weekly as recommended due to the overloaded nature of the plant.

WASTEWATER CHARACTERIZATION

The concentration of pollutants in the discharge was reported in the NPDES discharge monitoring reports. The effluent is characterized as shown in Table 2 shown below.

Table 2: Seashore Villa Wastewater Characterization. (Based on the three year period from April 1998—March 2002)

	Flow gpd	Influent BOD lbs/day	Effluent BOD mg/L	Effluent BOD lbs/day	Effluent TSS mg/L	Effluent TSS lbs/day
Effluent Limit or design criteria	15,000 (avg. for max month)	35	30	3.8	30	3.8
Average value or avg. of maximums	19,330 (avg. for max month)	86.2 (avg. for max months)	12.9	1.0	16.4	1.6
95th percentile value	20,250	78.6	53.5	4.2	34.2	3.5

*Because BOD and TSS was sampled only once per month, the daily average and the monthly value are the same.

Although the BOD and TSS average values were below limit, the 95th percentile was above the limit.

The flow criterion was not to be exceeded as described in Section S.4.A of the 1992 permit. The design flow of 15,000 gpd was exceeded each year and averaged 19,330 gpd for the maximum months. The design influent BOD loading for the maximum month was not supposed to exceed 35 lbs/day. The actual BOD loading for the maximum months in the three years examined averaged 86.2 lbs/day. The over all average BOD loading was 35 lbs/day and the 95th percentile was 78.6 lbs/day. The loading for flow and BOD far exceeds the design capacity of the facility.

Toxic pollutants that include ammonia, metals, and chlorine were sampled. The only pollutants that appear to have a reasonable potential to pollute are copper and chlorine. The copper is likely not a problem, but testing will be required to answer this question. More will be discussed later in this fact sheet.

There are no industrial or commercial dischargers of any kind. The residents in this community are restricted to those 55 and older.

SEPA COMPLIANCE

There has been no development or changes to the system that would require State Environmental Policy Act (SEPA) compliance at this time.

PROPOSED PERMIT LIMITATIONS

Federal and state regulations require that effluent limitations set forth in a NPDES permit must be either technology- or water quality-based. Technology-based limitations for municipal discharges are set by regulation (40 CFR 133, and Chapters 173-220 and 173-221 WAC). Water quality-based limitations are based upon compliance with the Surface Water Quality Standards (Chapter 173-201A WAC), Ground Water Standards (Chapter 173-200 WAC), Sediment Quality Standards (Chapter 173-204 WAC) or the National Toxics Rule (Federal Register, Volume 57, No. 246, Tuesday, December 22, 1992.) The most stringent of these types of limits must be chosen for each of the parameters of concern. Each of these types of limits is described in more detail below.

The limits in this permit are based in part on information received in the application. The effluent constituents in the application were evaluated on a technology- and water quality-basis. The limits necessary to meet the rules and regulations of the state of Washington were determined and included in this permit. The Department does not develop effluent limits for all pollutants that may be reported on the application as present in the effluent**.** Some pollutants are not treatable at the concentrations reported, are not controllable at the source, are not listed in regulation, and do not have a reasonable potential to cause a water quality violation**.** Effluent limits are not always developed for pollutants that may be in the discharge but not reported as present in the application. In those circumstances the permit does not authorize discharge of the non-reported pollutants. Effluent discharge conditions may change from the conditions reported in the permit application. If significant changes occur in any constituent, as described in 40 CFR 122.42(a), the Permittee is required to notify the Department. The Permittee may be in violation of the permit until the permit is modified to reflect additional discharge of pollutants.

DESIGN CRITERIA

In accordance with WAC 173-220-150 (1)(g), flows or waste loadings shall not exceed approved design criteria.

The design criteria for this treatment facility are taken from an April 1993 engineering report prepared by Howard Eddie, Inc. and are shown in table 3:

Table 3: Design Standards for the Seashore Villa WWTP.

Parameter	Design Quantity
Monthly average flow (max. month)	15,000 gpd
BOD_5 influent loading	35 lbs/day
Residential connections	112 mobile homes, 1 duplex, 4 conventional homes
Chlorine contact time	20 minutes minimum
Settling detention time	4 hours minimum

TECHNOLOGY-BASED EFFLUENT LIMITATIONS

Municipal wastewater treatment plants are a category of discharger for which technology-based effluent limits have been promulgated by federal and state regulations. These effluent limitations are given in the Code of Federal Regulations (CFR) 40 CFR Part 133 (federal) and in Chapter 173-221 WAC (state). These regulations are performance standards that constitute all known available and reasonable methods of prevention, control, and treatment for municipal wastewater.

The following technology-based limits for pH, fecal coliform, BOD_5, and TSS are taken from Chapter 173-221 WAC are:

Table 1: Technology-based Limits.

Parameter	Limit
pH:	shall be within the range of 6 to 9 standard units.
Fecal Coliform Bacteria	Monthly Geometric Mean = 200 organisms/100 mL Weekly Geometric Mean = 400 organisms/100 mL
BOD_5 (concentration)	Average Monthly Limit is the most stringent of the following: - 30 mg/L - may not exceed fifteen percent (15%) of the average influent concentration Average Weekly Limit = 45 mg/L
TSS (concentration)	Average Monthly Limit is the most stringent of the following: - 30 mg/L - may not exceed fifteen percent (15%) of the average influent concentration Average Weekly Limit = 45 mg/L
Chlorine	Average Monthly Limit = 0.5 mg/L Average Weekly Limit = 0.75 mg/L (A water quality limit has been determined for the new permit with lower limits than those shown above.)

The technology-based monthly average limitation for chlorine is derived from standard operating practices. The Water Pollution Control Federation's Chlorination of Wastewater (1976) states that a properly designed and maintained wastewater treatment plant can achieve adequate disinfection if a 0.5 mg/liter chlorine residual is maintained after fifteen minutes of contact time. See also Metcalf and Eddy, Wastewater Engineering, Treatment, Disposal and Reuse, Third Edition, 1991. A treatment plant that

provides adequate chlorination contact time can meet the 0.5 mg/liter chlorine limit on a monthly average basis. According to WAC 173-221-030(11)(b), the corresponding weekly average is 0.75 mg/liter.

The existing permit did not have a chlorine limit. A chlorine limit will be required in the new permit, however, the Permittee may not be able to still disinfect without the 0.5 and 0.75 mg/L technology limits shown above. A reasonable potential evaluation showed that a chlorine average monthly limit of 0.1 mg/L and a maximum daily limit of 0.2 mg/L will be required to meet water quality standards at the edge of the mixing zone. Therefore the facility will be required to add dechlorination or UV disinfection.

The following technology-based mass limits are based on WAC 173-220-130(3)(b) and 173-221-030(11)(b).

Monthly effluent mass loadings (lbs/day) for BOD and TSS were calculated as the maximum monthly design flow (.015 MGD) x Concentration limit (30 mg/L) x 8.34 (conversion factor) = mass limit 3.75 lb./day.

The BOD and TSS weekly average effluent mass loading is calculated as 1.5 x monthly loading = 5.6 lbs/day.

SURFACE WATER QUALITY-BASED EFFLUENT LIMITATIONS

In order to protect existing water quality and preserve the designated beneficial uses of Washington's surface waters, WAC 173-201A-060 states that waste discharge permits shall be conditioned such that the discharge will meet established Surface Water Quality Standards. The Washington State Surface Water Quality Standards (Chapter 173-201A WAC) is a state regulation designed to protect the beneficial uses of the surface waters of the state. Water quality-based effluent limitations may be based on an individual waste load allocation (WLA) or on a WLA developed during a basin-wide total maximum daily loading study (TMDL). Outer Budd Inlet near the Seashore Villa discharge is listed on the 303(d) list for dissolved oxygen and pH. A TMDL has not been conducted for these parameters. More will be discussed later under BOD and pH below.

NUMERICAL CRITERIA FOR THE PROTECTION OF AQUATIC LIFE

"Numerical" water quality criteria are numerical values set forth in the state of Washington's Water Quality Standards for Surface Waters (Chapter 173-201A WAC). They specify the levels of pollutants allowed in a receiving water while remaining protective of aquatic life. Numerical criteria set forth in the Water Quality Standards are used along with chemical and physical data for the wastewater and receiving water to derive the effluent limits in the discharge permit. When surface water quality-based limits are more stringent or potentially more stringent than technology-based limitations, they must be used in a permit.

NUMERICAL CRITERIA FOR THE PROTECTION OF HUMAN HEALTH

The state was issued 91 numeric water quality criteria for the protection of human health by the U.S. EPA (EPA 1992). These criteria are designed to protect humans from cancer and other disease and are primarily applicable to fish and shellfish consumption and drinking water from surface waters.

NARRATIVE CRITERIA

In addition to numerical criteria, "narrative" water quality criteria (WAC 173-201A-030) limit toxic, radioactive, or deleterious material concentrations below those which have the potential to adversely affect characteristic water uses, cause acute or chronic toxicity to biota, impair aesthetic values, or

adversely affect human health. Narrative criteria protect the specific beneficial uses of all fresh (WAC 173-201A-130) and marine (WAC 173-201A-140) waters in the state of Washington.

ANTIDEGRADATION

The state of Washington's Antidegradation Policy requires that discharges into a receiving water shall not further degrade the existing water quality of the water body. In cases where the natural conditions of a receiving water are of lower quality than the criteria assigned, the natural conditions shall constitute the water quality criteria. Similarly, when the natural conditions of a receiving water are of higher quality than the criteria assigned, the natural conditions shall constitute the water quality criteria. More information on the state Antidegradation Policy can be obtained by referring to WAC 173-201A-070.

The ambient conditions were established using ambient data from the Department's on-line database, and existing reports. The ambient data for the examination of ammonia and other criteria typically used 10th and 90th percentile values. Effluent data for ammonia and common metals were available from Seashore Villa DMRs and 5th and 95th percentile values were typically used.

CRITICAL CONDITIONS

Surface water quality-based limits are derived for the waterbody's critical condition, which represents the receiving water and waste discharge condition with the highest potential for adverse impact on the aquatic biota, human health, and existing or characteristic water body uses.

MIXING ZONES

The Water Quality Standards allow the Department to authorize mixing zones around a point of discharge in establishing surface water quality-based effluent limits. Both "acute" and "chronic" mixing zones may be authorized for pollutants that can have a toxic effect on the aquatic environment near the point of discharge. The concentration of pollutants at the boundary of these mixing zones may not exceed the numerical criteria for that type of zone. Mixing zones can only be authorized for discharges that are receiving all known, available, and reasonable methods of prevention, control and treatment (AKART) and in accordance with other mixing zone requirements of WAC 173-201A-100.

The National Toxics Rule (EPA, 1992) allows the chronic mixing zone to be used to meet human health criteria.

DESCRIPTION OF THE RECEIVING WATER

The facility discharges to Budd Inlet which is designated as a Class A receiving water in the vicinity of the outfall. Other nearby point source outfalls include the Tamoshan and Beverly Beach discharges which are approximately two miles away across Budd Inlet to the north west. The Boston Harbor discharge which is approximately three miles to the north and outside of Budd Inlet and the LOTT discharge is approximately three miles to the south at the head of the bay. Significant nearby non-point sources of pollutants include possible failing septic systems which have not been identified. Most of the denser housing developments and failing septic systems have been identified and are now served by upgraded sewage treatment plants. Boston Harbor was installed in 1990 and has been improved in recent years. The Tamoshan and Beverly Beach facilities will be combined into a new facility at Tamoshan and should be completed in the next couple of years. The LOTT treatment facility continues to undergo improvements.

Characteristic uses of Class A waters include the following: water supply (domestic, industrial, agricultural); stock watering; fish migration; fish and shellfish rearing, spawning and harvesting; wildlife

habitat; primary contact recreation; sport fishing; boating and aesthetic enjoyment; commerce and navigation.

Water quality of this class shall meet or exceed the requirements for all or substantially all uses.

SURFACE WATER QUALITY CRITERIA

Applicable criteria are defined in Chapter 173-201A WAC for aquatic biota. In addition, U.S. EPA has promulgated human health criteria for toxic pollutants (EPA 1992). Criteria for this discharge are summarized below:

Fecal Coliform	14 organisms/100 ml maximum geometric mean
Dissolved Oxygen	6 mg/L minimum
Temperature	16 degrees Celsius maximum or incremental increases above background
pH	7.0 to 8.5 standard units
Turbidity	less than 5 NTUs above background
Toxics	No toxics in toxic amounts (see Appendix C for numeric criteria for toxics of concern for this discharge)

CONSIDERATION OF SURFACE WATER QUALITY-BASED LIMITS FOR NUMERIC CRITERIA

Pollutant concentrations in the proposed discharge exceed water quality criteria with technology-based controls which the Department has determined to be AKART. A mixing zone is authorized in accordance with the geometric configuration, flow restriction, and other restrictions for mixing zones in Chapter 173-201A WAC and are defined as follows:

The dilution factors of effluent to receiving water that occur within these zones have been determined at the critical condition by the use of the Visual Plumes model. The dilution factors have been determined to be (from Appendix C):

	Acute	Chronic
Aquatic Life	18	31
Human Health, Carcinogen		31
Human Health, Non-carcinogen		31

Pollutants in an effluent may affect the aquatic environment near the point of discharge (near field) or at a considerable distance from the point of discharge (far field). Toxic pollutants, for example, are near-field pollutants--their adverse effects diminish rapidly with mixing in the receiving water. Conversely, a pollutant such as BOD is a far-field pollutant whose adverse effect occurs away from the discharge even after dilution has occurred. Thus, the method of calculating water quality-based effluent limits varies with the point at which the pollutant has its maximum effect.

The derivation of water quality-based limits also takes into account the variability of the pollutant concentrations in both the effluent and the receiving water.

The critical condition for the marine water discharge would likely be during the summer. Ambient data at critical conditions in the vicinity of the Seashore Villa outfall was taken from the Department's on-line database, and existing reports. The ambient data for the examination of ammonia and other criteria used 10^{th} and 90^{th} percentile values. The ambient background data used for this permit includes the following:

Table 4: Ambient and critical conditions

Parameter	Value used
Velocity	0.066 ft/sec to 1.05 ft/sec for acute conditions and 0.46 ft/sec for chronic conditions
Effluent flow (gpd)	3,000 to 17,000
Depth of discharge	12 feet
Diameter of outfall	3 inches
Length of outfall	400 feet from shore
Temperature	8.1° C to 18.2° C
Salinity	24.5 to 27.45 ppt
pH (high)	8.6
Dissolved Oxygen	6.7 mg/L
Total Ammonia-N	82.2 µg/L
Fecal Coliform	12.9 col/100 ml
Arsenic	0.0 µg/L
Cadmium	0.994 µg/L
Copper	0.74 µg/L
Lead	0.01 µg/L
Zinc	0.51 µg/L
All Other Metals	0.0 (below detection limits)

BOD_5—Budd Inlet is on the 303(d) list for not meeting dissolved oxygen (DO) and the Seashore Villa facility has at times not met the technology BOD limit of 30 mg/L. The DO criterion for marine waters is 6.0 mg/L minimum. The ambient DO is above the criterion at 6.7 mg/L. With simple mixing and a typical effluent DO discharge of 2.0 mg/L, the DO at the edge of the mixing zone would be 6.55 (see Appendix C). BOD is slow acting in its demand for oxygen and therefore would be more dilute before the BOD reaches a maximum demand. Therefore the simple mixing is fairly conservative. The Facility must still operate in a manner that reduces the BOD and maintains an oxidized effluent without the continued BOD violations.

Temperature--The impact of the discharge on the temperature of the receiving water was modeled by simple mixing analysis at critical condition. The receiving water temperature at the critical condition is 18.1°C and the effluent temperature is 20.0°C. The predicted resultant temperature at the boundary of the chronic mixing zone is 18.16°C and the incremental rise is 0.06°C.

Under critical conditions there is no predicted temperature violation of the Water Quality Standards for Surface Waters. Therefore, no effluent limitation for temperature was placed in the proposed permit.

pH--Because of the high buffering capacity of marine water, compliance with the technology-based limits of 6 to 9 will assure compliance with the Water Quality Standards for Surface Waters. The facility has been able to keep pH within the range of the limits.

Fecal coliform--The numbers of fecal coliform were modeled by simple mixing analysis using the technology-based limit of 400 org/100 ml, an ambient value of 12.9 org/100 ml and a dilution factor of 31. Simple mixing equation is shown below:

$$(FC_{ambient}(\text{dilution factor}-1) + FC_{discharged})/\text{dilution factor} = FC_{mixed}$$

$$(12.9(30) + 400)/31 = 25.4 \text{ org/100 ml}$$

The fecal coliform would be higher than the criterion of 14 org/100 ml at the edge of the mixing zone. In other words, there was a predicted violation of the fecal coliform criterion in the receiving water with the technology-based limit of 400. An effluent limit of 47 org/100 ml was found to be protective of the fecal coliform criterion and therefore will be proposed instead of the technology-based limitation.

Toxic Pollutants--Federal regulations (40 CFR 122.44) require NPDES permits to contain effluent limits for toxic chemicals in an effluent whenever there is a reasonable potential for those chemicals to exceed the surface water quality criteria. This process occurs concurrently with the derivation of technology-based effluent limits. Facilities with technology-based effluent limits defined in regulation are not exempted from meeting the Water Quality Standards for Surface Waters or from having surface water quality-based effluent limits.

The following toxics were determined to be present in the discharge: chlorine, ammonia, cadmium, copper, lead, and zinc. A reasonable potential analysis (See Appendix C) was conducted on these parameters to determine whether or not effluent limitations would be required in this permit.

The determination of the reasonable potential for (ammonia, chlorine, cadmium, copper, lead, and zinc) to exceed the water quality criteria was evaluated with procedures given in EPA, 1991 (Appendix C). The parameters used in the modeling are as follows: acute dilution factor 18, chronic dilution factor 31, receiving water temperature 18.2^{o}C. See table 4 (Ambient and critical conditions).

Valid ambient background data was available for ammonia, cadmium, copper, lead, and zinc. The ambient background value for chlorine was assumed to be zero. Calculations using all applicable data resulted in a determination that there is no reasonable potential for this discharge to cause a violation of water quality standards for all parameters except chlorine and copper. This determination assumes that the Permittee meets the other effluent limits of this permit.

For copper, however, the maximum concentration was calculated to be slightly higher than the criterion at the edge of the mixing zone, it is most likely that actual copper concentration values would be lower. The effluent concentrations were at or below detection (detection was 20 µg/L) three out of five times and the 20 µg/l detection value was used in calculating the 95th percentile. Only five samples were available which also increased the likelihood that the criterion would not be met. It is likely the actual values would be lower if the actual values of copper were known and used in the calculations and if more samples were taken. Therefore, it is unlikely that copper actually violates the criterion. However, a thorough retesting will be necessary to assure that copper is not a problem. Clean sampling techniques were likely not used and will be recommended for any future sampling. Other metals need not be retested as they are not expected in this setting.

Effluent limits were derived for chlorine, which was determined to have a reasonable potential to cause a violation of the Water Quality Standards. Effluent limits were calculated using methods from EPA, 1991 as shown in Appendix C.

The resultant effluent limits for chlorine are as follows:

Average monthly limit = 0.1 mg/L

Maximum daily limit = 0.2 mg/L

Because the facility also has difficulty meeting fecal coliform limits, it is more important at the present time to have viable disinfection. In order to achieve low chlorine, the Permittee will need to either install dechlorination or convert to ultra-violet disinfection. The fecal coliform in the effluent averaged 17.5 org/100 ml and the 95th percentile was 34 org/100 ml. These values are below the new proposed limit of 47 org/100 ml. The chlorine use, however, during this period was averaging 0.7 mg/L and there have been fecal coliform violations up to 1,600 org/100 ml. Therefore, the proposed permit contains a compliance schedule for meeting the water quality-based limits for chlorine. Prior to authorizing this compliance schedule the Department required the Permittee to evaluate the possibility of complying with the limitations by changes other than construction.

The proposed permit contains interim limits for chlorine and fecal coliform as required by Chapter 173-201A WAC. The limits are based on existing demonstrated performance.

Water quality criteria for metals in Chapter 173-201A WAC are based on the dissolved fraction of the metal.

The Permittee may provide data clearly demonstrating the seasonal partitioning of the dissolved metal in the ambient water in relation to an effluent discharge. Metals criteria may be adjusted on a site-specific basis when data is available clearly demonstrating the seasonal partitioning in the ambient water in relation to an effluent discharge.

Metals criteria may also be adjusted using the water effects ratio approach established by US EPA, as generally guided by the procedures in US EPA Water Quality Standards Handbook, December 1983, as supplemented or replaced.

WHOLE EFFLUENT TOXICITY

The Water Quality Standards for Surface Waters require that the effluent not cause toxic effects in the receiving waters. Many toxic pollutants cannot be detected by commonly available detection methods. However, toxicity can be measured directly by exposing living organisms to the wastewater in laboratory tests and measuring the response of the organisms. Toxicity tests measure the aggregate toxicity of the whole effluent, and therefore this approach is called whole effluent toxicity (WET) testing.

Toxicity caused by unidentified pollutants is not expected in the effluent from this discharge as determined by the screening criteria given in Chapter 173-205 WAC. Therefore, no whole effluent toxicity testing is required in this permit. The Department may require effluent toxicity testing in the future if it receives information that toxicity may be present in this effluent.

HUMAN HEALTH

Washington's water quality standards now include 91 numeric health-based criteria that must be considered in NPDES permits. These criteria were promulgated for the state by the U.S. EPA in its National Toxics Rule (Federal Register, Volume 57, No. 246, Tuesday, December 22, 1992).

The Department has determined that the applicant's discharge is unlikely to contain chemicals regulated for human health and does not contain chemicals of concern based on existing data or knowledge. The discharge will be re-evaluated for impacts to human health at the next permit reissuance.

SEDIMENT QUALITY

The Department has promulgated aquatic sediment standards (Chapter 173-204 WAC) to protect aquatic biota and human health. These standards state that the Department may require Permittees to evaluate the potential for the discharge to cause a violation of applicable standards (WAC 173-204-400).

The Department has determined through a review of the discharger characteristics and effluent characteristics that this discharge has no reasonable potential to violate the Sediment Management Standards.

GROUND WATER QUALITY LIMITATIONS

The Department has promulgated Ground Water Quality Standards (Chapter 173-200 WAC) to protect uses of ground water. Permits issued by the Department shall be conditioned in such a manner so as not to allow violations of those standards (WAC 173-200-100).

This Permittee has no discharge to ground and therefore no limitations are required based on potential effects to ground water.

MONITORING REQUIREMENTS

Monitoring, recording, and reporting are required (WAC 173-220-210 and 40 CFR 122.41) to verify that the treatment process is functioning correctly and the effluent limitations are being achieved.

Monitoring for copper is being required to further characterize the effluent. This pollutant could have a significant impact on the quality of the surface water.

The 1992 permit sampling was not frequent enough to meet current standards or frequent enough to spot problems as they arise. A facility of this size (less than 100,000 gpd) should be sampling BOD, TSS, and fecal coliform at least once per week. Sampling for pH, and total residual chlorine needs to be sampled at least five days per week. These sampling frequencies are the bare minimum for all facilities.

Monitoring of sludge quantity and quality is necessary to determine the appropriate uses of the sludge. Sludge monitoring is required by the current state and local solid waste management program and also by EPA under 40 CFR 503.

The monitoring schedule is detailed in the proposed permit under Condition S.2. Specified monitoring frequencies take into account the quantity and variability of discharge, the treatment method, past compliance, significance of pollutants, and cost of monitoring. The required monitoring frequency is consistent with agency guidance given in the current version of the Department's *Permit Writer's Manual* (July 1994) for all activated sludge sewage treatment plants that are less than 0.1 mgd.

EFFLUENT LIMITS BELOW QUANTITATION

The water quality-based effluent limits for metals in the wastewater may be below the capability of current analytical technology to quantify. The Quantitation Level is the level at which concentrations can be reliably reported with a specified level of error. For maximum daily effluent limits, if the measured effluent concentration is below the Quantitation Level, the Permittee reports NQ for non-quantifiable. For average monthly effluent limits, all effluent concentrations below the Quantitation Level but above the Method Detection Level are used as reported for calculating the average monthly value.

EFFLUENT LIMITS BELOW DETECTION

The water quality-based effluent limit for copper and other metals in the wastewater may be below the capability of current analytical technology to detect. The Method Detection Level (MDL) is the minimum concentration of an analyte that can be measured and reported with a 99 percent confidence that it's concentration is greater than zero as determined by a specific laboratory method. For maximum daily limits, if the concentrations are below the MDL the Permittee reports ND for non-detectable. For average monthly limits, all values above the MDL are used as reported and all values below the MDL are calculated as zero.

LAB ACCREDITATION

With the exception of certain parameters the permit requires all monitoring data to be prepared by a laboratory registered or accredited under the provisions of Chapter 173-50 WAC, *Accreditation of Environmental Laboratories.* The laboratory at this facility is not accredited and must send samples to an accredited lab. For the last several years, the facility has been sending its samples to Water Management Laboratories Inc. which is accredited for general chemistry, trace metals, and micro-biology.

OTHER PERMIT CONDITIONS

REPORTING AND RECORDKEEPING

The conditions of S3 are based on the authority to specify any appropriate reporting and recordkeeping requirements to prevent and control waste discharges (WAC 173-220-210).

PREVENTION OF FACILITY OVERLOADING

Overloading of the treatment plant is a violation of the terms and conditions of the permit. To prevent this from occurring, RCW 90.48.110 and WAC 173-220-150 require the Permittee to take the actions detailed in proposed permit requirement S.4 to plan expansions or modifications before existing capacity is reached and to report and correct conditions that could result in new or increased discharges of pollutants. Condition S.4 restricts the amount of flow.

From the DMR records of BOD and flow, the facility appears to be overloaded. The Permittee will need to conduct an analysis of their facility loading and plan for alternatives to handle the loading. These alternatives may include: an engineering analysis showing the facility can handle the load, adding additional capacity to the facility, or replacing the facility.

OPERATION AND MAINTENANCE (O&M)

The proposed permit contains Condition S.5 as authorized under RCW 90.48.110, WAC 173-220-150, Chapter 173-230 WAC, and WAC 173-240-080. It is included to ensure proper operation and regular maintenance of equipment, and to ensure that adequate safeguards are taken so that constructed facilities are used to their optimum potential in terms of pollutant capture and treatment.

The proposed permit requires submission of an updated O&M Manual for the entire sewage system

RESIDUAL SOLIDS HANDLING

To prevent water quality problems the Permittee is required in permit Condition S7 to store and handle all residual solids (grit, screenings, scum, sludge, and other solid waste) in accordance with the requirements

of RCW 90.48.080, State Water Quality Standards WAC 173-201A, and Biosolids Handling regulations covered under WAC 173-308.

The final use and disposal of sewage sludge from this facility is regulated by U.S. EPA under 40 CFR 503. The disposal of other solid waste is covered under the jurisdiction of the local health district.

Requirements for monitoring sewage sludge and recordkeeping are included in this permit. This information will by used by the Department to develop or update local limits and is also required under 40 CFR 503.

EFFLUENT MIXING STUDY

The Department has estimated the amount of mixing of the discharge within the authorized mixing zone to determine the potential for violations of the Water Quality Standards for Surface Waters (Chapter 173-201A WAC). Condition S.8 of this permit requires the Permittee to more accurately determine the mixing characteristics of the discharge. Mixing will be measured or modeled under conditions specified in the permit to assess whether assumptions made about dilution will protect the receiving water quality outside the allotted dilution zone boundary.

Two things could greatly affect the outcome of the dilution and should be reevaluated by the Permittee which include: the re-addition of a diffuser to the outfall and the depth of water over the outfall (at mean lower low water) which may change with the addition of a diffuser. The dilution was evaluated without a diffuser at a depth of only 12 feet which resulted in a dilution lower than can be achieved for these waters. Some of the parameters that did not meet standards may be able to be met with better dilution.

OUTFALL EVALUATION

Proposed permit Condition S.10 requires the Permittee to conduct an outfall inspection and submit a report detailing the findings of that inspection. The purpose of the inspection is to determine the condition of the discharge pipe and diffusers and to determine if sediment is accumulating in the vicinity of the outfall.

The last evaluation of the outfall showed that the diffuser is missing. The outfall is PVC pipe and is located in an area that may be vulnerable to boats, anchors, and currents.

GENERAL CONDITIONS

General Conditions are based directly on state and federal law and regulations and have been standardized for all individual municipal NPDES permits issued by the Department.

PERMIT ISSUANCE PROCEDURES

PERMIT MODIFICATIONS

The Department may modify this permit to impose numerical limitations, if necessary to meet Water Quality Standards, Sediment Quality Standards, or Ground Water Standards, based on new information obtained from sources such as inspections, effluent monitoring, outfall studies, and effluent mixing studies.

The Department may also modify this permit as a result of new or amended state or federal regulations.

RECOMMENDATION FOR PERMIT ISSUANCE

This proposed permit meets all statutory requirements for authorizing a wastewater discharge, including those limitations and conditions believed necessary to protect human health, aquatic life, and the beneficial uses of waters of the state of Washington. The Department proposes that this permit be issued for five years.

REFERENCES FOR TEXT AND APPENDICES

Environmental Protection Agency (EPA)

1992. National Toxics Rule. Federal Register, V. 57, No. 246, Tuesday, December 22, 1992.

1991. Technical Support Document for Water Quality-based Toxics Control. EPA/505/2-90-001.

1988. Technical Guidance on Supplementary Stream Design Conditions for Steady State Modeling. USEPA Office of Water, Washington, D.C.

1985. Water Quality Assessment: A Screening Procedure for Toxic and Conventional Pollutants in Surface and Ground Water. EPA/600/6-85/002a.

1983. Water Quality Standards Handbook. USEPA Office of Water, Washington, D.C.

Metcalf and Eddy.

1991. Wastewater Engineering, Treatment, Disposal, and Reuse. Third Edition.

Tsivoglou, E.C., and J.R. Wallace.

1972. Characterization of Stream Reaeration Capacity. EPA-R3-72-012. (Cited in EPA 1985 op.cit.)

Washington State Department of Ecology.

1994. Permit Writer's Manual. Publication Number 92-109

Water Pollution Control Federation.

1976. Chlorination of Wastewater.

Wright, R.M., and A.J. McDonnell.

1979. In-stream Deoxygenation Rate Prediction. Journal Environmental Engineering Division, ASCE. 105(EE2). (Cited in EPA 1985 op.cit.)

APPENDIX A--PUBLIC INVOLVEMENT INFORMATION

The Department has tentatively determined to issue a permit to the applicant listed on page 1 of this fact sheet. The permit contains conditions and effluent limitations which are described in the rest of this fact sheet.

Public notice of application was published on July 14, 2002, and July 21, 2002, in the *Daily Olympian* to inform the public that an application had been submitted and to invite comment on the reissuance of this permit.

The Department will publish a Public Notice of Draft (PNOD) on September 29, 2002, in the *Daily Olympian* to inform the public that a draft permit and fact sheet are available for review. Interested persons are invited to submit written comments regarding the draft permit. The draft permit, fact sheet, and related documents are available for inspection and copying between the hours of 8:00 a.m. and 5:00 p.m. weekdays, by appointment, at the regional office listed below. Written comments should be mailed to:

Water Quality Permit Administrator
Department of Ecology
Southwest Regional Office
P.O. Box 47775
Olympia, WA 98504-7775.

Any interested party may comment on the draft permit or request a public hearing on this draft permit within the 30-day comment period to the address above. The request for a hearing shall indicate the interest of the party and the reasons why the hearing is warranted. The Department will hold a hearing if it determines there is a significant public interest in the draft permit (WAC 173-220-090). Public notice regarding any hearing will be circulated at least 30 days in advance of the hearing. People expressing an interest in this permit will be mailed an individual notice of hearing (WAC 173-220-100).

Comments should reference specific text followed by proposed modification or concern when possible. Comments may address technical issues, accuracy and completeness of information, the scope of the facility's proposed coverage, adequacy of environmental protection, permit conditions, or any other concern that would result from issuance of this permit.

The Department will consider all comments received within 30 days from the date of public notice of draft indicated above, in formulating a final determination to issue, revise, or deny the permit. The Department's response to all significant comments is available upon request and will be mailed directly to people expressing an interest in this permit.

Further information may be obtained from the Department by telephone, (360) 407-6554, or by writing to the address listed above.

This permit and fact sheet were written by Eric Schlorff.

APPENDIX B--GLOSSARY

Acute Toxicity--The lethal effect of a pollutant on an organism that occurs within a short period of time, usually 48 to 96 hours.

AKART-- An acronym for "all known, available, and reasonable methods of prevention, control, and treatment".

Ambient Water Quality--The existing environmental condition of the water in a receiving water body.

Ammonia--Ammonia is produced by the breakdown of nitrogenous materials in wastewater. Ammonia is toxic to aquatic organisms, exerts an oxygen demand, and contributes to eutrophication. It also increases the amount of chlorine needed to disinfect wastewater.

Average Monthly Discharge Limitation --The highest allowable average of daily discharges over a calendar month, calculated as the sum of all daily discharges measured during a calendar month divided by the number of daily discharges measured during that month (except in the case of fecal coliform). The daily discharge is calculated as the average measurement of the pollutant over the day.

Average Weekly Discharge Limitation -- The highest allowable average of daily discharges over a calendar week, calculated as the sum of all daily discharges measured during a calendar week divided by the number of daily discharges measured during that week. The daily discharge is calculated as the average measurement of the pollutant over the day.

Best Management Practices (BMPs)--Schedules of activities, prohibitions of practices, maintenance procedures, and other physical, structural and/or managerial practices to prevent or reduce the pollution of waters of the State. BMPs include treatment systems, operating procedures, and practices to control: plant site runoff, spillage or leaks, sludge or waste disposal, or drainage from raw material storage. BMPs may be further categorized as operational, source control, erosion and sediment control, and treatment BMPs.

BOD_5--Determining the Biochemical Oxygen Demand of an effluent is an indirect way of measuring the quantity of organic material present in an effluent that is utilized by bacteria. The BOD_5 is used in modeling to measure the reduction of dissolved oxygen in a receiving water after effluent is discharged. Stress caused by reduced dissolved oxygen levels makes organisms less competitive and less able to sustain their species in the aquatic environment. Although BOD is not a specific compound, it is defined as a conventional pollutant under the federal Clean Water Act.

Bypass--The intentional diversion of waste streams from any portion of a treatment facility.

CBOD5 – The quantity of oxygen utilized by a mixed population of microorganisms acting on the nutrients in the sample in an aerobic oxidation for five days at a controlled temperature of 20 degrees Celcius, with an inhibitory agent added to prevent the oxidation of nitrogen compounds. The method for determining CBOD5 is given in 40 CFR Part 136.

Chlorine--Chlorine is used to disinfect wastewaters of pathogens harmful to human health. It is also extremely toxic to aquatic life.

Chronic Toxicity--The effect of a pollutant on an organism over a relatively long time, often 1/10 of an organism's lifespan or more. Chronic toxicity can measure survival, reproduction or growth rates, or other parameters to measure the toxic effects of a compound or combination of compounds.

Clean Water Act (CWA)--The Federal Water Pollution Control Act enacted by Public Law 92-500, as amended by Public Laws 95-217, 95-576, 96-483, 97-117; USC 1251 et seq.

Combined Sewer Overflow (CSO)--The event during which excess combined sewage flow caused by inflow is discharged from a combined sewer, rather than conveyed to the sewage treatment plant because either the capacity of the treatment plant or the combined sewer is exceeded.

Compliance Inspection - Without Sampling--A site visit for the purpose of determining the compliance of a facility with the terms and conditions of its permit or with applicable statutes and regulations.

Compliance Inspection - With Sampling--A site visit to accomplish the purpose of a Compliance Inspection - Without Sampling and as a minimum, sampling and analysis for all parameters with limits in the permit to ascertain compliance with those limits; and, for municipal facilities, sampling of influent to ascertain compliance with the percent removal requirement. Additional sampling may be conducted.

Composite Sample--A mixture of grab samples collected at the same sampling point at different times, formed either by continuous sampling or by mixing a minimum of four discrete samples. May be "time-composite"(collected at constant time intervals) or "flow-proportional" (collected either as a constant sample volume at time intervals proportional to stream flow, or collected by increasing the volume of each aliquot as the flow increased while maintaining a constant time interval between the aliquots.

Construction Activity--Clearing, grading, excavation and any other activity which disturbs the surface of the land. Such activities may include road building, construction of residential houses, office buildings, or industrial buildings, and demolition activity.

Continuous Monitoring –Uninterrupted, unless otherwise noted in the permit.

Critical Condition--The time during which the combination of receiving water and waste discharge conditions have the highest potential for causing toxicity in the receiving water environment. This situation usually occurs when the flow within a water body is low, thus, its ability to dilute effluent is reduced.

Dilution Factor--A measure of the amount of mixing of effluent and receiving water that occurs at the boundary of the mixing zone. Expressed as the inverse of the effluent fraction e.g., a dilution factor of 10 means the effluent comprises 10% by volume and the receiving water 90%.

Engineering Report--A document which thoroughly examines the engineering and administrative aspects of a particular domestic or industrial wastewater facility. The report shall contain the appropriate information required in WAC 173-240-060 or 173-240-130.

Fecal Coliform Bacteria--Fecal coliform bacteria are used as indicators of pathogenic bacteria in the effluent that are harmful to humans. Pathogenic bacteria in wastewater discharges are controlled by disinfecting the wastewater. The presence of high numbers of fecal coliform bacteria in a water body can indicate the recent release of untreated wastewater and/or the presence of animal feces.

Grab Sample--A single sample or measurement taken at a specific time or over as short period of time as is feasible.

Industrial User-- A discharger of wastewater to the sanitary sewer which is not sanitary wastewater or is not equivalent to sanitary wastewater in character.

Industrial Wastewater--Water or liquid-carried waste from industrial or commercial processes, as distinct from domestic wastewater. These wastes may result from any process or activity of industry, manufacture, trade or business, from the development of any natural resource, or from animal operations such as feed lots, poultry houses, or dairies. The term includes contaminated storm water and, also, leachate from solid waste facilities.

Infiltration and Inflow (I/I)--"Infiltration" means the addition of ground water into a sewer through joints, the sewer pipe material, cracks, and other defects. "Inflow" means the addition of precipitation-caused drainage from roof drains, yard drains, basement drains, street catch basins, etc., into a sewer.

Interference -- A discharge which, alone or in conjunction with a discharge or discharges from other sources, both:

Inhibits or disrupts the POTW, its treatment processes or operations, or its sludge processes, use or disposal and;

Therefore is a cause of a violation of any requirement of the POTW's NPDES permit (including an increase in the magnitude or duration of a violation) or of the prevention of sewage sludge use or disposal in compliance with the following statutory provisions and regulations or permits issued thereunder (or more stringent State or local regulations): Section 405 of the Clean Water Act, the Solid Waste Disposal Act (SWDA) (including title II, more commonly referred to as the Resource Conservation and Recovery Act (RCRA), and including State regulations contained in any State sludge management plan prepared pursuant to subtitle D of the SWDA), sludge regulations appearing in 40 CFR Part 507, the Clean Air Act, the Toxic Substances Control Act, and the Marine Protection, Research and Sanctuaries Act.

Major Facility--A facility discharging to surface water with an EPA rating score of > 80 points based on such factors as flow volume, toxic pollutant potential, and public health impact.

Maximum Daily Discharge Limitation--The highest allowable daily discharge of a pollutant measured during a calendar day or any 24-hour period that reasonably represents the calendar day for purposes of sampling. The daily discharge is calculated as the average measurement of the pollutant over the day.

Method Detection Level (MDL)--The minimum concentration of a substance that can be measured and reported with 99% confidence that the analyte concentration is above zero and is determined from analysis of a sample in a given matrix containing the analyte.

Minor Facility--A facility discharging to surface water with an EPA rating score of < 80 points based on such factors as flow volume, toxic pollutant potential, and public health impact.

Mixing Zone--A volume that surrounds an effluent discharge within which water quality criteria may be exceeded. The area of the authorized mixing zone is specified in a facility's permit and follows procedures outlined in State regulations (Chapter 173-201A WAC).

National Pollutant Discharge Elimination System (NPDES)--The NPDES (Section 402 of the Clean Water Act) is the Federal wastewater permitting system for discharges to navigable waters of the United States. Many states, including the State of Washington, have been delegated the authority to issue these permits. NPDES permits issued by Washington State permit writers are joint NPDES/State permits issued under both State and Federal laws.

Pass through -- A discharge which exits the POTW into waters of the–State in quantities or concentrations which, alone or in conjunction with a discharge or discharges from other sources, is a cause of a violation of any requirement of the POTW's NPDES permit (including an increase in the magnitude or duration of a violation), or which is a cause of a violation of State water quality standards.

pH--The pH of a liquid measures its acidity or alkalinity. A pH of 7 is defined as neutral, and large variations above or below this value are considered harmful to most aquatic life.

Potential Significant Industrial User--A potential significant industrial user is defined as an Industrial User which does not meet the criteria for a Significant Industrial User, but which discharges wastewater meeting one or more of the following criteria:

a. Exceeds 0.5 % of treatment plant design capacity criteria and discharges <25,000 gallons per day or;

b. Is a member of a group of similar industrial users which, taken together, have the potential to cause pass through or interference at the POTW (e.g. facilities which develop photographic film or paper, and car washes).

The Department may determine that a discharger initially classified as a potential significant industrial user should be managed as a significant industrial user.

Quantitation Level (QL)-- A calculated value five times the MDL (method detection level).

Significant Industrial User (SIU)--

1) All industrial users subject to Categorical Pretreatment Standards under 40 CFR 403.6 and 40 CFR Chapter I, Subchapter N and;

2) Any other industrial user that: discharges an average of 25,000 gallons per day or more of process wastewater to the POTW (excluding sanitary, noncontact cooling, and boiler blow-down wastewater); contributes a process wastestream that makes up 5 percent or more of the average dry weather hydraulic or organic capacity of the POTW treatment plant; or is designated as such by the Control Authority* on the basis that the industrial user has a reasonable potential for adversely affecting the POTW's operation or for violating any pretreatment standard or requirement (in accordance with 40 CFR 403.8(f)(6)).

Upon finding that the industrial user meeting the criteria in paragraph 2, above, has no reasonable potential for adversely affecting the POTW's operation or for violating any pretreatment standard or requirement, the Control Authority* may at any time, on its own initiative or in response to a petition received from an industrial user or POTW, and in accordance with 40 CFR 403.8(f)(6), determine that such industrial user is not a significant industrial user.

*The term "Control Authority" refers to the Washington State Department of Ecology in the case of non-delegated POTWs or to the POTW in the case of delegated POTWs.

State Waters--Lakes, rivers, ponds, streams, inland waters, underground waters, salt waters, wetlands, and all other surface waters and watercourses within the jurisdiction of the state of Washington.

Stormwater--That portion of precipitation that does not naturally percolate into the ground or evaporate, but flows via overland flow, interflow, pipes, and other features of a storm water drainage system into a defined surface water body, or a constructed infiltration facility.

Technology-based Effluent Limit--A permit limit that is based on the ability of a treatment method to reduce the pollutant.

Total Suspended Solids (TSS)--Total suspended solids are the particulate materials in an effluent. Large quantities of TSS discharged to a receiving water may result in solids accumulation. Apart from any toxic effects attributable to substances leached out by water, suspended solids may kill fish, shellfish, and other aquatic organisms by causing abrasive injuries and by clogging the gills and respiratory passages of various aquatic fauna. Indirectly, suspended solids can screen out light and can promote and maintain the development of noxious conditions through oxygen depletion.

Upset--An exceptional incident in which there is unintentional and temporary noncompliance with technology-based permit effluent limitations because of factors beyond the reasonable control of the Permittee. An upset does not include noncompliance to the extent caused by operational error, improperly designed treatment facilities, lack of preventative maintenance, or careless or improper operation.

Water Quality-based Effluent Limit--A limit on the concentration or mass of an effluent parameter that is intended to prevent the concentration of that parameter from exceeding its water quality criterion after it is discharged into a receiving water.

APPENDIX C--TECHNICAL CALCULATIONS

Several of the Excel® spreadsheet tools used to evaluate a discharger's ability to meet Washington State water quality standards can be found on the Department's homepage at http://www.ecy.wa.gov.

Ammonia Criteria Calculations for Saltwater

Calculation of seawater fraction of un-ionized ammonia
from Hampson (1977). Un-ionized ammonia criteria for
salt water are from EPA 440/5-88-004.

Based on Lotus File NH3SALT.WK1 Revised 19-Oct-93

INPUT	
1. Temperature (deg C):	18.1
2. pH:	8.6
3. Salinity (g/Kg):	29.1

OUTPUT	
1. Pressure (atm; EPA criteria assumes 1 atm):	1.0
2. Molal Ionic Strength (not valid if >0.85):	0.596
3. pKa8 at 25 deg C (Whitfield model "B"):	9.314
4. Percent of Total Ammonia Present as Unionized:	10.344 %
5. Unionized ammonia criteria (mg un-ionized NH3 per liter) from EPA 440/5-88-004	
Acute:	0.233
Chronic:	0.035
6. Total Ammonia Criteria (mg/L as NH3)	
Acute:	2.25
Chronic:	0.34
7. Total Ammonia Criteria (mg/L as NH3-N)	

Acute:	1.85
Chronic:	0.28

Table of Reasonable Potential to Pollute Water

				State Water Quality Standard		Max concentration at edge of...		
Parameter	Metal Criteria Translator as decimal Acute	Metal Criteria Translator as decimal Chronic	Ambient Concentration (metals as dissolved) *ug/L*	Acute *ug/L*	Chronic *ug/L*	Acute Mixing Zone *ug/L*	Chronic Mixing Zone *ug/L*	**LMT REQ'D?**
Ammonia			82.2000	1850.0000	280.0000	226.02	165.71	NO
Chlorine				13.0000	7.5000	50.74	29.46	YES
Cadmium	0.994	0.994	0.1000	42.00	9.3	0.35	0.25	NO
Copper	0.83	0.83	0.7400	4.80	3.10	4.99	3.21	YES
Lead	0.951	0.95	0.0100	210.00	8.10	7.01	4.07	NO
Zinc	0.946	0.946	0.5100	90.00	81.00	14.90	8.86	NO

REASONABLE POTENTIAL CALCULATIONS

Effluent percentile value	*Pn*	Max effluent conc. measured (metals as total recoverable) *ug/L*	Coeff Variation *CV*	*s*	# of samples *n*	Multiplier	Acute Dil'n Factor	Chronic Dil'n Factor
0.95	0.829	1818.00	0.60	0.55	16	1.47	18	31
0.95	0.920	800.00	0.60	0.55	36	1.14	18	31
0.95	0.549	2.00	0.60	0.55	5	2.32	18	31
0.95	0.549	40.00	0.60	0.55	5	2.32	18	31
0.95	0.549	57.00	0.60	0.55	5	2.32	18	31
0.95	0.549	118.00	0.60	0.55	5	2.32	18	31

COMMENTS

Although the maximum concentration shown for copper is slightly higher than the criterion at the edge of the mixing zone, it is most likely that actual copper concentration values would be lower. The effluent concentrations were at or below detection (<20 µg/L) half of the time. The 20 µg/l detection value was used in calculating the 95th percentile. It is likely the actual values would be lower. Therefore it is unlikely that copper actually violates the criterion. Clean sampling techniques were likely not used and would be recommended for any future sampling.

LIMIT CALCULATIONS FOR CHLORINE

PARAMETER	Acute Dil'n Factor	Chronic Dil'n Factor	Ambient Concentration *ug/L*	Water Quality Standard Acute *ug/L*	Water Quality Standard Chronic *ug/L*	**Average Monthly Limit (AML)** ug/L	**Maximum Daily Limit (MDL)** ug/L	Comments
Chlorine	18.0	31.00	0	13.0000	7.5000	**116.6**	**234.0**	

Waste Load Allocation (WLA) and Long Term Average (LTA) Calculations

WLA Acute *ug/L*	WLA Chronic *ug/L*	LTA Acute *ug/L*	LTA Chronic *ug/L*	LTA Coeff. Var. (CV) *decimal*	LTA Prob'y Basis *decimal*	Limiting LTA *ug/L*
234	232.50	75.1	122.6	0.60	0.99	75.1

Statistical variables for permit limit calculation

Coeff. Var. (CV) *decimal*	AML Prob'y Basis *decimal*	MDL Prob'y Basis *decimal*	# of Samples per Month *n*	
0.60	0.95	0.99	4.00	1.00

Dissolved oxygen concentration following initial dilution.

References: EPA/600/6-85/002b and EPA/430/9-82-011

Based on Lotus File IDOD2.WK1 Revised 19-Oct-93

INPUT	
1. Dilution Factor at Mixing Zone Boundary:	31
2. Ambient Dissolved Oxygen Concentration (mg/L):	6.7
3. Effluent Dissolved Oxygen Concentration (mg/L):	2
4. Effluent Immediate Dissolved Oxygen Demand (mg/L):	0
OUTPUT	
Dissolved Oxygen at Mixing Zone Boundary (mg/L):	6.55

APPENDIX D--RESPONSE TO COMMENTS

Comment by The Seashore Villa proponents:

In reference to the conversation that you, Eric, Ken Martig, & myself had last month about the new permit requirements for Seashore Villa Mobile Home Park WWTP. Request you accept Ken Martig's suggestion on increasing the flow requirements to at least .017MGD and Ken periodically monitors and takes samples on a quarterly basis from the irregular influent sampling point and possibly keep sampling on a continued monthly basis as before. Like Ken said, it is a fixed system even though there is possible infiltration/inflow problem. You had mentioned verbally about DNR's interest in hooking back up if they were to pay for a new sewage plant since you mentioned the sewage plant is on borrowed time maybe 5 to 10 years left. Even though improvements have been made, I'm working on this issue with certain people I know in DNR. I will give you feedback on issue as time goes by. Trying to keep costs down is also an issue with Seashore Villa WWTP. This report is the official commenting period by the public comment period.

Robert J. Koden (Waste Water Operator III)

Response by Ecology:

As discussed in the Fact Sheet, the flow had already been increased to a maximum of 15,000 gallons per day. Because the plant is now averaging 17,000 gallons per day, there should be plans to increase the capacity of the plant, plan on replacing the plant, or conduct an engineering review to prove that the plant can handle the higher flows and still process the waste. Because this was done during the last permit cycle, it is doubtful that the plant will prove to be capable of handling the higher flows.

The sampling requirements for weekly influent and effluent monitoring are the minimum frequency required for facility of this size and type. The monitoring frequency will continue in order to determine the effectiveness of the facility in removing pollutants.